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21 November 1955

File #25
ad hoc

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MEMORANDUM FOR: THE RECORD

SUBJECT : Visit to NBS Radiation Lab

ILLEGIB

1. Time and Place of Meeting: The meeting was held on 17 November 1955 in Room 600, High Voltage Building, National Bureau of Standards.

2. Attendance: Dr. Ugo Fano Radiation Lab, NBS
Dr. Lewis Spencer Radiation Lab, NBS
[redacted] TSS/APD

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3. Purpose of Visit: Discuss the possibility of measuring the thickness of walls by neutron backscattering.

4. Discussion:

a. Dr. Fano and Dr. Spencer were informed by the undersigned of our security requirements and what they could and could not do, security wise. They were also informed that Dr. Huntoon of NBS had recommended them to us.

b. The problem of how to measure the thickness of various masonry walls by the use of gamma rays or the backscattering of neutrons was presented to them. They were informed that such an instrument would be used in conjunction with the drilling of a hole in a wall, and should be able to not only measure the thickness of a wall, but to also indicate any large obstructions in the wall, such as steel beams or joints.

It was stated that such an instrument should be of such a size that it could be carried, in pieces if necessary, by one man. They were informed that it was desirable to first have a rough estimate of the thickness of a masonry wall and after a hole had been drilled for a number of inches, a close final measurement.

At first, neither of the two were interested in undertaking such a venture, but after considering it for a while, both agreed that they had done shielding problems which were the reverse of what is required in this problem. Dr. Spencer did some rough calculations on the feasibility of using gamma rays instead of neutrons and concluded that gamma rays

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DEC 16	REV DATE 22 JUL 80	BY 057447
ORIG COMP 056	OPI 56	TYPE 03
ORIG CLASS 5	PAGES 2	REV CLASS 2
JUST 22	NEXT REV 2010	AUTH: HR 10-2

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could be used for close, accurate measurements. He also stated that neutron backscattering was feasible and that measuring walls up to 2 - 3 feet in thickness shouldn't be too great a problem.

Dr. Fano stated that he believed that NBS had all the equipment needed to work on such a problem and that it probably would be necessary to clear certain of the people working under him.

The undersigned informed them that [redacted] [redacted] had been consulted on this problem and because of lack of personnel, were unable to undertake research on it. However, they would gladly supply any equipment that would be needed and would be most happy to collaborate with NBS, if NBS so desired.

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c. Dr. Fano and Dr. Spencer were informed that Mr. Wildhack of the Office of Basic Instrumentation, NBS, was also working on the wall measurement problem, but from a different approach. They were informed that Mr. Wildhack's group had completed a feasibility study on the use of pulse ultra sonics and were now in the process of correlating results for different walls, that this group was also doing subsonic resonance studies and had high hopes for this as a rough estimator. They were informed that they could contact Mr. Wildhack if they so desired. In turn, Mr. Wildhack was informed that Dr. Fano and Dr. Spencer were cleared and cognizant of the problem and an exchange of information would be desirable.

d. A meeting between [redacted] CD, DR. Fano and Dr. Spencer, NBS, was arranged, so that [redacted] could inform the two Doctors of what has been accomplished by [redacted] and to arrange for the deliverance of any equipment NBS may need. This meeting will take place at 1330 on 22 November at NBS. Since [redacted] CD, has been working on the neutron backscattering phase of the masonry drilling problem, it was felt by the undersigned that he should monitor the work to be done by Dr. Fano and Dr. Spencer.

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